a first circuit that combines the modified electrical receive signals of each of said transducer elements to form an array output signal; and

a second circuit coupled to said first circuit that generates image data from said array output signal.

REMARKS

This Response is in reply to the Office Action mailed March 19, 2002. Claims 1-38 are pending. Claims 1-23 are allowed. Claims 24-37 are rejected as improper recapture, and new claim 38 is added herein. Reconsideration is respectfully requested.

Claim 24 as amended recites:

> "a combining at each transducer element of ***the frequency and phase components*** of the row and column control signals for that transducer element in such a manner as to provide ***a focused acoustic signal*** at a given focal distance and direction from said array."

The combining of the frequency and phase components of the row and column control signals and coherently combining the signals from each transducer element (a focused acoustic signal is achieved by coherent signal combination) was cited by the Examiner as reasons for allowance of claims in the parent, particularly claims 1 and 25. These limitations have been provided in claim 24. Note also the function of the active devices recited in parent claim 19 - combining of frequency and phase - also applies to claim 24. The function of the active devices is discussed on Page 13, third paragraph, of Applicant's Response to Office Action mailed October 10, 2002 (paper #13).

Applicant recognizes while that the wording in claim 24 is not identical to that of claims 1 or 25, because claim 24 recites transmission, the essence of combining "frequency and phase components" to create individual transducer element control signals and to achieve a "coherent combination" of transducer element output signals is the same amongst claims 1, 25 and 24. Note that all reference to claims in the parent case are to the claims as numbered in paper #13.

Claim 29 has been amended to reflect both the form and substance of allowed claim 19. Applicant submits that the reasons for allowance of claim 19 include the provision of active devices as discussed on Page

13, third paragraph, of paper #13. Claim 29 is not identical to claim 19, because it recites transmission, yet it includes the same basic subject matter that resulted in the allowance of claim 19, and thus is appropriate for a reissue application and is not recapture.

Claim 30 has been amended to reflect the relevant content of claims 1 and 25 concerning frequency and phase components and the coherent combination of transducer element receive signals. Claim 36 has been amended to recite a circuit for generating image data.

New Claim 38 reflects the subject matter of allowed claim 9.

Applicant has made an attempt herein to amended the independent reissue claims in such a manner as to reflect the content that resulted in allowance of claims in the parent case. Applicant has attempted to incorporate the helpful comments of the Examining staff.

Applicant respectfully submits that the reissue claims presented herein are now in condition for allowance (along with the claims in the parent case) and early notification of same is respectfully requested. Should the Examiner believe that a telephone conference would help further the prosecution of this case, the Examiner is requested to contact the undersigned at the listed telephone number.

The Assistant Commissioner is hereby authorized to charge underpayment of any fees (including any filing fees under 37 C.F.R. §1.16 for additional claims and any patent application processing fees under 37 C.F.R. §1.17 including any fee for extension of time) associated with this communication or credit any overpayment to Deposit Account No. 01-0272. A duplicate copy of this authorization is enclosed.

Respectfully Submitted
on behalf of Applicant,

Date: 7-19-02

Steven J. Adamson
Reg. No. 32,776

P.O. Box 5997
Portland, OR 97228
Tel: 503.248.0100 Fax: 503.248.0105
sja@ip-rights.com

Separate, marked-up version of amended claims (§1.121(c)):

24 (amended). An acoustic energy transmitting apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column 2-D array;

control circuit for propagating row and column control signals for each of said M rows and said N columns, each control signal having a frequency and a phase component; and

wherein said transducer elements and said control circuit are configured so as to achieve a [mixing] combining at each transducer element of the frequency and phase components of the row and column control [signal] signals for that transducer element in such a manner as to provide a focused acoustic signal at a given focal distance and direction from said array.

29 (amended). An acoustic energy transmitting apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column [1-D] array, where M and N are positive integers and at least one of M and N is greater than one; [and]

M row control lines, each coupled to the transducer elements in one of said M rows;

N column control lines, each coupled to the transducer elements in one of said N columns;

control circuit for propagating row and column control signals for each of said M rows and said N columns, a control signal for each transducer element being a combination of one of said row control signals and one of said column control signals;

a plurality of active devices, each coupled to one of said transducer elements for combining the row control signal and the column control signal of that transducer element;

wherein said transducer elements [and said], control circuit and active devices are configured so as to achieve a [mixing] combining at each transducer element of the row and column control [signal] signals for that transducer element in such a manner as to provide a focused acoustic signal at a given focal distance and direction from said array; and

wherein each of said electro-acoustic transducer elements is configured within said apparatus to function in a non-linear manner in operation.

30 (amended). An acoustic energy receiving apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column array;

control circuit for propagating row and column control signals for each of said M rows and said N columns, each row and column control signal having a frequency and a phase component; and

wherein said transducer elements and said control circuit are configured so as to achieve a [mixing] combining at each transducer element of the frequency and a phase components of the row and column control [signal] signals for that transducer element with a resultant electrical receive signal corresponding to an acoustic signal incident on that transducer element; and

a filter that filters spurious frequencies output from the transducer elements;

wherein [the row and column control signals and said filter] said transducer elements, control circuit and filter are configured to coherently combine the electrical receive signal of each of said transducer elements and to achieve focused acoustic signal reception at a given distance and direction from said array.

36 (amended). The apparatus of claim 30, [wherein the transducer elements and the control circuit are configured such that the row and column control signals for each transducer element contain an appropriate frequency and phase shift that, when combined with the electric signal corresponding to an incident acoustic signal at that transducer element, modifies the received electric signal in such a manner as to permit the coherent combination of the modified received electric signals from all of said plurality of transducer elements] further comprising a circuit that generates image data from the coherent combination of transducer element receive signals.

wherein said transducer elements and said control circuit are configured so as to achieve a combining at each transducer element of the frequency and phase components of the row and column control signals for that transducer element in such a manner as to provide a focused acoustic signal at a given focal distance and direction from said array.

29 (amended). An acoustic energy transmitting apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column array, where M and N are positive integers and at least one of M and N is greater than one;

M row control lines, each coupled to the transducer elements in one of said M rows;

N column control lines, each coupled to the transducer elements in one of said N columns;

control circuit for propagating row and column control signals for each of said M rows and said N columns, a control signal for each transducer element being a combination of one of said row control signals and one of said column control signals;

a plurality of active devices, each coupled to one of said transducer elements for combining the row control signal and the column control signal of that transducer element;

wherein said transducer elements, control circuit and active devices are configured so as to achieve a combining at each transducer element of the row and column control signals for that transducer element in such a manner as to provide a focused acoustic signal at a given focal distance and direction from said array; and

wherein each of said electro-acoustic transducer elements is configured within said apparatus to function in a non-linear manner in operation.

30 (amended). An acoustic energy receiving apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column array;